

DIELECTRIC LAYER FOR SEMICONDUCTOR DEVICE  
AND METHOD OF MANUFACTURING THE SAME

ABSTRACT

5

A multi-layer dielectric layer structure for a semiconductor device. The multi-layer dielectric layer structure comprises a silicate interface layer having a dielectric constant greater than that of silicon nitride and a high-k dielectric layer overlying the silicate interface layer. The high-k dielectric layer comprises one or more ordered pairs of first and second layers. With the present invention, the dielectric constant of the high-k dielectric layer can be optimized while improving interface characteristics. With a higher crystallization temperature realized by forming the multi-layer structure, each of whose layers is not more than the critical thickness, leakage current can be reduced, thereby improving device performance.

15